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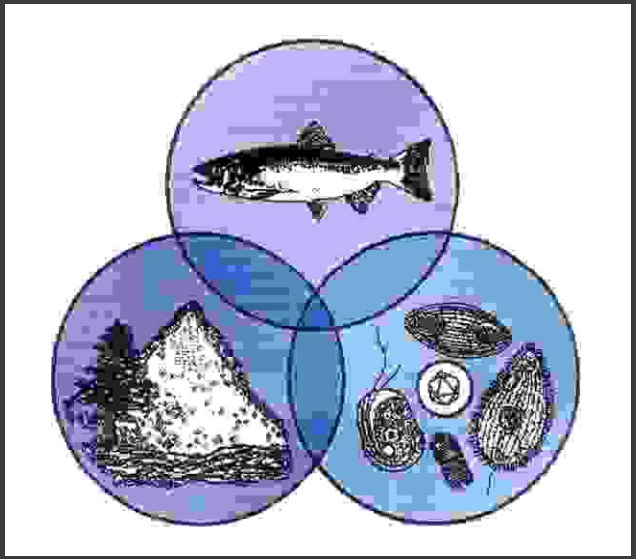
# FISH HEALTH SURVEILLANCE IN MONTANA

“An ounce of prevention is worth a pound of cure”

Benjamin Franklin circa 1780

# Basic Fish Health Considerations

- **Prevention is easier than Control – often the only Control is Prevention**
- **When you move fish from one place to another, you will expose fish in the receiving water to any pathogens on or in the fish being moved**
- **Hatcheries don't create disease – but they can spread it**



Disease in fish is a complex interaction between the host, the pathogen, and the environment.

Don’t move Fish!

# SO HOW DO WE PREVENT…?

# But we need to move fish


We test for pathogens

# HOW DO WE MOVE FISH SAFELY?

# Fish Health 'Certification'

- **Certification is a spot check for specific pathogens**
- **Standardized protocols**
- **Results tell us that pathogens were or were not detected in samples tested – that is all! It's not perfect, but it is the protocol we use-nationwide.**
- **Is a risk management tool. Helps to better understand and quantify risk.**

# What do we test for?

We test for the pathogen, not the disease. Presence of the pathogen represents the potential for disease.

| TYPE | PATHOGEN | DISEASE | EGG TRANSMIT |
|---|---|---|---|
| BACTERIA | R. SAL. | BKD | YES |
| BACTERIA | Y. RUCKERI | ERM | NO |
| BACTERIA | A. SAL. | FURUNC. | NO |
| PARASITE | M. CER. | WHIRLING DISEASE | NO |
| VIRUS | IPNV | IPN | YES |
| VIRUS | IHNV | IHN | YES |
| VIRUS | VHSV | VHS | YES |

# Three Bacteria

*Renibacterium salmoninarum*

- Causes Bacterial Kidney Disease
- Vertically transmitted

*Aeromonas salmonicida*

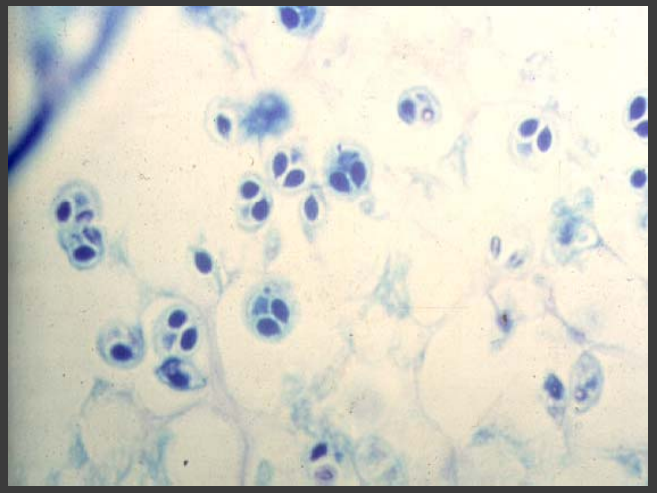
- Causes Furunculosis

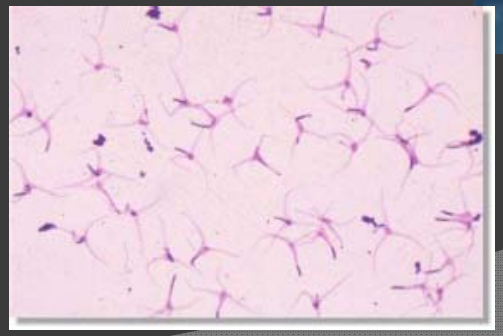
*Yersinia ruckeri*

- Causes Enteric Redmouth

# One parasite

- *Myxobolus cerebralis*
  - Causes Whirling disease
  - Widespread in Montana
  - Significant impacts to fish health program





# Three Viruses

- Infectious Pancreatic Necrosis
- Infectious Hematopoeitic Necrosis
- Viral Hemorrhagic Septicemia

# Characteristics of Viruses

- Acute mortality
- Spread easily fish to fish
- Potentially spread within or on eggs
- Can persist in a carrier state

# VHS facts

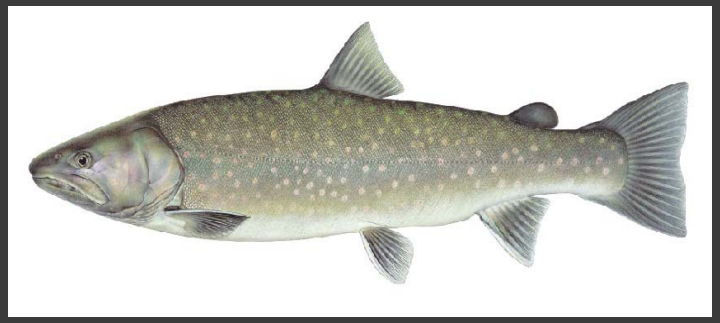
- Present in the Great Lakes
- Freshwater and marine reservoirs
- 4 known genotypes
- Acute mortality
- Wide range of susceptible fish species
- Numerous vectors
- Affects multiple levels of the food chain

# Non-Salmonid Fish Pathogens

- **Protocols are less established**
- **We test for what we know to test for**


# Sampling Wild Fish Populations

- Remember BLUEBOOK, well forget it!
- The same fish health rules apply to wild fish as hatchery fish, but…
  - Adequate health testing of wild fish is tough
  - Population size is often limited
  - Surrogate species may be needed
  - Sample size is often compromised
  - Risk assessment must decide if it is worth it




Other sources of surveillance data

# FISH HEALTH MONITORING IS A NUMBERS GAME

***The better job we do testing fish, the less risk we take. If the potential rewards are great enough, the more risk we may be willing to take. We enjoy the rewards when it is done right, and we are responsible when we make a mistake.***